

had already discovered connecting threads between the two components in *Cytisus Adami*, which Miss HUME confirmed. In *Solanum tubingense* she found them, while in the other *Solanum* she did not. These results show that genetically unrelated tissues can be joined by connecting threads, and the inference is that such threads do not arise from spindle fibers, since no nuclei of the two components have even been sisters.—J. M. C.

**The embryo sac of *Bellis*.**—The peculiar development of the antipodal region in some Compositae has long been known. In 1895 the reviewer<sup>19</sup> described an "antipodal oosphere" in *Aster novae-angliae*, and nearly ten years later Miss OPPERMAN<sup>20</sup> not only found an antipodal oosphere in *Aster undulatus*, but noted its fertilization. Recently, CARANO<sup>21</sup> has described a "pseudo-oosphere" in the antipodal region of *Bellis perennis*. In all these cases, the region in which the abnormal oosphere is found is greatly enlarged; in fact, it has the appearance of an embryo sac. Doubtless the conditions in the enlarged antipodal cell are about the same as in a normal embryo sac, and consequently the occasional organization of an oosphere is not so strange as we formerly supposed.—CHARLES J. CHAMBERLAIN.

**Reproduction in gymnosperms and angiosperms.**—Under this title ERNST<sup>22</sup> gives an excellent résumé of the present status of the subject. The illustrations, which are taken from the leading contributions, are well reproduced. The bibliographies are in two categories: those which treat the subject in a general way, like textbooks, and those which deal with original investigation. The title, *Hand dictionary of the sciences*, is somewhat misleading for English-speaking people, for this "dictionary" is more like an encyclopedia, consisting of several volumes, edited by a staff of specialists. OLTMANNS is the general editor of botany, and he has distributed the various topics to specialists in the various fields. All articles, like the one just mentioned, are signed.—CHARLES J. CHAMBERLAIN.

**Mitosis in *Oenothera*.**—In the somatic divisions of *Oenothera lutea* GATES<sup>23</sup> finds the chromosomes forming from the delicate reticulum by the parallel fusion of several strands. No prochromosomes are present, and no continuous spirem is formed. The splitting of the chromosomes occurs in late prophase,

<sup>19</sup> CHAMBERLAIN, CHARLES J., The embryo sac of *Aster novae-angliae*. BOT. GAZ. 20:205-212. pls. 15, 16. 1895.

<sup>20</sup> OPPERMAN, MARIE, A contribution to the life history of *Aster*. BOT. GAZ. 37:353-362. pls. 14, 15. 1904.

<sup>21</sup> CARANO, ENRICO, Su particolari anomalie del sacco embrionale di *Bellis perennis*. Annali di Botanica 11:435-439. pl. 9. 1913.

<sup>22</sup> ERNST, A., Fortpflanzung der Gymnospermen und Angiospermen. Abdruck aus Handwörterbuch der Naturwissenschaften 4:227-261. figs. 37. 1913.

<sup>23</sup> GATES, R. R., Somatic mitosis in *Oenothera*. Ann. Botany 26:993-1010. pl. 86. 1912.